REMARKS

The Examiner is thanked for the performance of a thorough search.

By this amendment, Claims 8, 16, 20, 25, 32-35, 37-39, and 42-43 have been amended. Amendments to the claims are made for the purpose of improving the readability of the pending claims by clarifying the meaning of a local lock manager process by expressly stating the implicit definition of a local lock manager process. Claims 1-7, 31, 36, and 41 have been cancelled as a result of the prior restriction requirement. No claims have been added. Hence, Claims 8-30, 32-35, 37-40, and 42-44 are pending in the application.

REJECTION OF CLAIMS 8-30, 32-35, 37-40, AND 42-44 UNDER 35 U.S.C. § 103(a)

Claims 8-30, 32-35, 37-40, and 42-44 were rejected under 35 U.S.C. § 103(a) as being anticipated by U.S. Patent No. 6,253,236 issued to Troxel et al. ("*Troxel*") in view of U.S. Patent No. 6,493,804 issued to Soltis et al. ("*Soltis*"). It is respectfully submitted that Claims 8-30, 32-35, 37-40, and 42-44 are patentable over *Troxel* and *Soltis*, either individually or in combination, for at least the reasons provided hereinafter.

CLAIM 8

Claim 8 features:

> A method of controlling use by concurrent users of a distributed resource on a network, wherein use of the resource is limited to a specified maximum number of concurrent users, the method comprising the computer-implemented steps of:
> **providing a distributed lock manager process comprising a plurality of local lock manager processes executing on a corresponding plurality of hosts,**
> **wherein each of the plurality of local lock manager processes may grant a lock on the same resource;**
> **associating a user identification for each user with one host of the plurality of hosts; and**

responding to a request for the resource associated with a first user having a first user identification associated with a first host of the plurality of hosts by requesting a lock from a first local lock manager process executing on the first host. (emphasis added).

Even if *Troxel* and *Soltis* were to be properly combined, at least the above-bolded elements of Claim 8 would still not be disclosed, taught, or suggested by *Troxel* or *Soltis*, either individually or in combination.

Claim 8 recites a method of controlling use by concurrent users of a distributed resource on a network. The resource is limited to a specified maximum number of concurrent users. A distributed lock manager process, comprising a plurality of local lock manager processes, executes on a corresponding plurality of hosts. Each of the plurality of local lock manager processes may grant a lock on the same resource. A user identification for each user is associated with one host of the plurality of hosts. A request, associated with a first user having a first user identification associated with a first host of the plurality of hosts, for the resource is responded to by requesting a lock from a first local lock manager process executing on the first host. Advantageously, by responding to requests for resources in this fashion, the number of concurrent users of a distributed resource on a network may be controlled in a manner that scales to support a large number of clients and avoids a single point of failure.

Troxel, on the other hand, teaches an approach for enabling a client computer system to access data on a mainframe host computer system in a manner that prevents conflicts for data stored under different types of file access methods and provides security at a file level and recovery from interruption of communication between the host and client computer systems (Col. 2, line 40 – Col. 3, line 21). *Troxel* maintains a concurrent user counter that is incremented each time a client computer system logs into the host computer system to enforce limits on the

number of concurrent users that can access the host computer system (See concurrent user counter 354 at Col. 5, lines 26-30).

Troxel lacks any suggestion of a **distributed lock manager process** comprising **a plurality of local lock manager processes**. Instead, the portion of *Troxel* cited teaches a single, centralized component, on the mainframe host computer system, that is responsible for locking resources upon receipt of a client request (Col. 1, lines 15-36). Further, *Troxel* lacks any suggestion of associating a user identification for each user with one host of a plurality of hosts. Also, the cited portion of *Troxel* lacks any suggestion of responding to requests for resources as claimed. In recognition of the deficiencies of *Troxel's* teachings, the Office Action acknowledges:

> Troxel does not explicitly teach providing a distributed lock manager process comprising a plurality of local lock manager processes executing on a corresponding plurality of hosts; associating a user identification for each user with one host of the plurality of hosts; and responding to a request for the resource associated with a first user having a first user identification associated with a first host of the plurality of hosts by requesting a lock from a first local lock manager process on the first host.

Soltis teaches an approach for a global file system that comprises a plurality of clients which each may access one or more data storage devices of the global file system (See FIG. 1; Col. 5, lines 25-45; Col. 10, lines 9-11). The data storage devices may be pooled together into a shared disk memory in a Network Storage Pool (NSP) arrangement (Col. 10, lines 19-23). A data storage device includes one or more locks that are each associated with the use of a storage block of the data storage device. Clients access a particular storage block, of a particular data storage device, by requesting a lock associated with the particular storage block from the particular storage device (see Abstract; Col. 2, line 45 - Col. 3, line 64).

In the approach of *Soltis*, the Network Storage Pool (NSP) provides shared storage resources that are substantially equally accessible to each client in the system (Col. 10, lines 33-

35). *Soltis* teaches that each data storage device maintains a set of locks that may be granted to any of the clients accessing data blocks of only that data storage device (see FIG. 7; Col. 13, line 65 – Col. Col. line 32). A particular data storage device of *Soltis* may only grant locks on the data block of that particular data storage device. Thus, *Soltis* expressly teaches away from a distributed lock manager process comprising a plurality of local lock manger processes, executing on a corresponding plurality of hosts, that each may grant a lock on the same resource.

As a result of the fundamental differences between Claim 8 and the approach of *Troxel* and *Soltis*, numerous features of Claim 8 are not disclosed, taught, or suggested by *Troxel* or *Soltis*, either individually or in combination.

For example, Claim 8 recites the feature of "providing a distributed lock manager process comprising a plurality of local lock manager processes executing on a corresponding plurality of hosts" and "wherein each of the plurality of local lock manager processes may grant a lock on the same resource." The single, centralized server of *Troxel* that is responsible for locking resources upon receipt of a client request (Col. 1, lines 15-36) does not suggest a plurality of local lock manger processes, executing on a corresponding plurality of hosts, that each may grant a lock on the same resource. Indeed, the Office Action acknowledges, "*Troxel* does not explicitly teach providing a distributed lock manager process comprising a plurality of local lock manager processes executing on a corresponding plurality of hosts," and instead, relies upon *Soltis* to show these features.

The portion of *Soltis* cited to show these features (FIG. 4; Clients 105A-N) merely shows a plurality of clients. Clients 105A-N of FIG. 4 request locks on data blocks from the data storage devices in the Network Storage Pool (NSP) 400. While each of the data storage devices, in the NSP 400, may grant a lock on a data block, a particular data storage device only grants

locks to data blocks of that particular data storage device (see FIG. 7; Col. 13, line 65 – Col. Col. line 32). Thus, *Soltis* expressly teaches away from the feature of "wherein each of the plurality of local lock manager processes may grant a lock on the same resource." Thus, the above-quoted elements are not disclosed, taught, or suggested by *Troxel* or *Soltis*, either individually or in combination.

Claim 8 also recites the feature of "associating a user identification for each user with one host of the plurality of hosts." *Troxel* fails to suggest associating a user identification for each user with one host of the plurality of hosts. Indeed, the Office Action acknowledges, "*Troxel* does not explicitly teach ... associating a user identification for each user with one host of the plurality of hosts," and instead, relies upon *Soltis* to show this feature.

The portion of *Soltis* cited to show this feature (FIG. 4; Clients 105A-N) merely shows a plurality of clients. No explanation is provided by the Office Action as to why clients 105 A-N of FIG. 4 show associating a user identification for each user with one host of the plurality of hosts. Importantly, the entire disclosure of *Soltis* lacks any teaching of associating a user identification for each user with any host. Further, each host, of the plurality of hosts, to which the user identifications are associated, is executing a local lock manager process. As explained above, *Soltis* lacks any teaching of a local lock manger process; consequently, it follows that *Soltis* lacks any teaching of associating a user identification for each user with one host of the plurality of hosts that are each executing a local lock manager process. Thus, this element cannot be disclosed, taught, or suggested by *Troxel* or *Soltis*, either individually or in combination.

Claim 8 also recites the feature of "responding to a request for the resource associated with a first user having a first user identification associated with a first host of the plurality of

hosts by requesting a lock from a first local lock manager process executing on the first host."

Troxel fails to suggest responding to a request, as claimed, because, *inter alia*, *Troxel* lacks any

teaching of a local lock manager process. Indeed, the Office Action acknowledges, "*Troxel* does

not explicitly teach ... responding to a request for the resource associated with a first user having

a first user identification associated with a first host of the plurality of hosts by requesting a lock

from a first local lock manager process on the first host," and instead, relies upon *Soltis* to show

this feature.

The portion of *Soltis* cited to show this feature (Col. 3, lines 41-46) merely states, *in toto*:

> In summary, device locks provide decentralized control of the shared data storage
> device on which they are located. Clients acquire the locks for excluding other
> clients, thereby maintaining data consistency, or for shared use by multiple
> clients. The device locks allow use of a serverless distributed architecture global
> file system (GFS).

While the cited portion of *Soltis* states that clients may acquire locks for shared use by

multiple clients, *Soltis* teaches that a particular data storage device may only grant locks for data

blocks of the particular data storage device (see FIG. 7; Col. 13, line 65 – Col. Col. line 32).

Thus, when a data storage device receives a request for a resource that involves a lock, rather

than requesting a lock from a local lock manager process executing on a host associated with the

user identification that is associated with the requesting user, the data storage device processes

the request without communicating with a local lock manager process. Indeed, as explained

above, *Soltis* lacks any suggestion of a user identification that associates users with hosts or a

local lock manager process that may grant a lock on the resource as another local lock manager

process. As a result, this element is not disclosed, taught, or suggested by *Solits*.

As at least one element of Claim 8 is not disclosed, taught, or suggested by *Troxel* or

Soltis, either individually or in combination, it is respectfully submitted that Claim 8 is

patentable over the cited art and is in condition for allowance.

Troxel and *Soltis* also have not been properly combined, and as a result, the rejection

under 35 U.S.C. § 103(a) may not be maintained. The Office Action states that it would have

been obvious to "combine the teachings of *Troxel* with the teaching of *Soltis* in order to provide

decentralized control of shared data, therefore maintaining data consistency (col. 3, lines 41-

45)," but nothing in either *Troxel* or *Soltis* that teaches or suggests combining their respective

teachings.

As stated in the Federal Circuit decision *In re Dembiczak*, 50 USPQ.2d 1617

(Fed. Cir. 1999), (citing *Gore v. Garlock*, 220 USPQ 303, 313 (Fed. Cir. 1983)), "it is very easy

to fall victim to the insidious effect of the hindsight syndrome where that which only the inventor

taught is used against its teacher." *Id.* The Federal Circuit stated in *Dembiczak* "that the best

defense against subtle but powerful attraction of a hindsight-based obviousness analysis is

rigorous application of the requirement for a showing of the teaching or suggestion to combine

prior art references." *Id.* Thus, the Federal Circuit explains that a proper obviousness analysis

requires "*particular factual findings* regarding the locus of the suggestion, teaching, or

motivation to combine prior art references." *Id.* (emphasis added).

In particular, the Federal Circuit states:

> "We have noted that evidence of a suggestion, teaching, or motivation to
> combine may flow from the prior art references themselves, the knowledge of
> one of ordinary skill in the art, or, in some cases, from the nature of the
> problem to be solved…although 'the suggestion more often comes from the
> teachings of the pertinent references'…The range of sources available,
> however, does ***not diminish the requirement for actual evidence***. That is, the
> ***showing must be clear and particular***…Broad conclusory statements
> regarding the teaching of multiple references, standing alone, are not
> 'evidence.'" *Id.* (emphasis added; internal citations omitted).

Neither *Troxel* or *Soltis* show any suggestion, teaching, or motivation to combine their

teachings, nor does the Office Action provide a "clear and particular" showing of the suggestion,

teaching, or motivation to combine their teachings. The portion of *Soltis* cited to show such a

motivation (Col. 3, lines 41-45) does not provide any motivation for combination with *Troxel*, but instead, states that a particular device, to control and ensure the consistency of data at that particular device, may use device locks. Nothing in this portion suggests any motivation for combining the *Soltis* with *Troxel*. In fact, the only motivation provided in the Office Action is the hindsight observation that by combining features of those references, one may achieve the benefits achieved from the invention as described and claimed in the application. Such a hindsight observation is not consistent with the Federal Circuit's requirement for "particular factual findings."

CLAIM 16

Claim 16 features:

> A method of controlling concurrent users of a distributed resource on a network, the resource limited to a maximum number of concurrent users, the method comprising the computer-implemented steps of:
> receiving a request for the distributed resource from a client process for a user having a user identification;
> **determining a home location associated with the user identification, the home location indicating a unique host among a plurality of hosts that execute a corresponding plurality of local lock manager processes of a distributed lock manager process,**
> **wherein each of the plurality of local lock manager processes may grant a lock on the same resource;**
> **sending a request for a lock object for the distributed resource to a first local lock manager process of the distributed lock manager process, the request including the home location;**
> **receiving the lock object for the distributed resource from a second local lock manager process executing on the unique host, if a number of outstanding locks granted by the second local lock manager process is less than a value of a local resource maximum defined for the second local lock manager process; and**
> providing access to the resource to the first client only in response to receiving the lock object. (emphasis added).

As explained above, *Troxel* and *Soltis* have not been properly combined; as a result, the rejection of Claim 16 under 35 U.S.C. § 103(a) cannot be properly maintained based on the improper combination of *Troxel* and *Soltis*. However, even if *Troxel* and *Soltis* were to be properly combined, at least the above-bolded elements of Claim 16 would still not disclosed, taught, or suggested by *Troxel* or *Soltis*, either individually or in combination.

As explained above with respect to Claim 16, *Troxel* and *Soltis* both fail to teach the concept of a local lock manager process. Consequently, *Troxel* and *Soltis*, either individually or in combination, fail to show numerous features of Claim 16 featuring a local lock manager process, such as:

> "determining a home location associated with the user identification, the home location indicating a unique host among a plurality of hosts that execute a corresponding plurality of local lock manager processes of a distributed lock manager process,
> wherein each of the plurality of local lock manager processes may grant a lock on the same resource;
> sending a request for a lock object for the distributed resource to a first local lock manager process of the distributed lock manager process, the request including the home location;
> receiving the lock object for the distributed resource from a second local lock manager process executing on the unique host, if a number of outstanding locks granted by the second local lock manager process is less than a value of a local resource maximum defined for the second local lock manager process"

Additionally, *Troxel* fails to suggest a determining a home location associated with a user identification, where the home location indicates a unique host among a plurality of hosts that execute a corresponding plurality of local lock manager processes of a distributed lock manager process. Indeed, the Office Action acknowledges that *Troxel*, "fails to teach the home location indicating a unique host among a plurality of hosts that execute a corresponding plurality of local lock manager processes of a distributed lock manager process," and instead, relies upon *Soltis* to show this feature.

However, the portion of *Soltis* cited to show this element merely shows clients 105A-N

of FIG. 4 of *Soltis*. This teaching does not cure the deficiencies of *Troxel's* teaching because

there is no suggestion of (a) a home location associated with a user identification, (b) anything

indicating a unique host amount a plurality of hosts, or (c) a plurality of local lock manager

processes of a distributed lock manager process. Consequently, this element cannot be disclosed,

taught, or suggested for this reason as well.

As at least one element of Claim 16 is not disclosed, taught, or suggested by *Troxel* or

Soltis, either individually or in combination, it is respectfully submitted that Claim 16 is

patentable over the cited art and is in condition for allowance.

CLAIM 20

As explained above, *Troxel* and *Soltis* have not been properly combined; as a result, the

rejection of Claim 20 under 35 U.S.C. § 103(a) cannot be properly maintained based on the

improper combination of *Troxel* and *Soltis*.

The Office Action has rejected Claim 20 under the same rationale as Claim 16.

However, Independent Claim 20 features elements that are not recited in Claim 16. For example,

Claim 20 features the elements of:

> A method of controlling concurrent users of a distributed resource on a network,
> the distributed resource limited to a maximum number of concurrent users, the
> method comprising the steps of:
> **receiving at a first local lock manager process of a distributed lock manager**
> **process a request for a lock object for the distributed resource from a**
> **resource server, wherein the request includes data indicating a**
> **particular user home location;**
> **determining whether a second local lock manager process of the distributed**
> **lock manager process is associated with the particular user home**
> **location, and if so, requesting the lock object from the second local**
> **lock manager process**

> **wherein the first local lock manager process may grant a lock on the same resource as the second local lock manager process.** (emphasis added)

The above-bolded elements of Claim 20 are not recited in Claim 16. As a result, <u>there are no reasons on the record as to why the above-bolded elements of Claim 20 are not patentable over the cited art</u>.

Troxel and *Soltis*, either individually or in combination, fail to suggest a first local lock manager process that may grant a lock on the same resource as the second local lock manager. Further, *Troxel* and *Soltis*, either individually or in combination, fail to suggest a request that includes data indicating a particular user home location.

As a result, for at least the above reasons, the Applicant respectfully submits that Claim 20 is patentable over the cited art and is in condition for allowance.

CLAIM 25

Claim 25 features:

> A method of distributing a resource on a network, the resource limited to a maximum number of concurrent users, the method comprising the steps of:
> **providing a distributed lock manager process comprising a plurality of local lock manager processes executing on a corresponding plurality of hosts,**
> **wherein each of the plurality of local lock manager processes may grant a lock on the same resource;**
> **generating a value for a local resource maximum number of users stored on each host of the plurality of hosts such that a summation over the plurality of hosts of the value for the local resource maximum yields an aggregate value that does not exceed the maximum number of concurrent users;**
> determining whether to increase a first value in a first resource maximum stored on a first host of the plurality of hosts; and
> if it is determined to increase the first resource maximum, then
> > decreasing by a particular amount a second value in a second resource maximum stored on a second host of the plurality of hosts, and
> > increasing by the particular amount the first value in the first resource maximum stored on the first host,

> wherein each local lock manager process is configured to grant a lock for the resource if the number of outstanding locks granted by the local lock manager process is less than a value of the local resource maximum stored on the corresponding host.
> (emphasis added).

As explained above, *Troxel* and *Soltis* have not been properly combined; as a result, the rejection of Claim 25 under 35 U.S.C. § 103(a) cannot be properly maintained based on the improper combination of *Troxel* and *Soltis*. However, even if *Troxel* and *Soltis* were to be properly combined, at least the above-bolded elements of Claim 25 would still not disclosed, taught, or suggested by *Troxel* or *Soltis*, either individually or in combination.

As explained above, neither *Troxel* nor *Soltis* suggest a local lock manager process as claimed. Consequently, for at least the above reasons, *neither Troxel* nor *Soltis* show, *inter alia*, the elements of:

> "providing a distributed lock manager process comprising a plurality of local lock manager processes executing on a corresponding plurality of hosts,
> wherein each of the plurality of local lock manager processes may grant a lock on the same resource,
> wherein each local lock manager process is configured to grant a lock for the resource if the number of outstanding locks granted by the local lock manager process is less than a value of the local resource maximum stored on the corresponding host"

Troxel is cited to show the element of "generating a value for a local resource maximum number of users stored on each host of the plurality of hosts such that a summation over the plurality of hosts of the value for the local resource maximum yields an aggregate value that does not exceed the maximum number of concurrent users." However, the portion of *Troxel* cited (Abstract; FIG. 4D; Col. 1, lines 15-36) lack any suggestion any value, for a local resource maximum number of users, that is stored on each host of a plurality of hosts such that a summation over the plurality of hosts of the value yields an aggregate value that does not exceed the maximum number of concurrent users. Instead, the portion *of Troxel* cited shows a single,

centralized server that provides a locking mechanism. Thus, *arguendo*, while such a single, centralized server might store a value for a maximum number of users that may access a particular resource (although the cited portion of *Troxel* does not states this), such a single, centralized server cannot store "a value for a local resource maximum number of users stored on each host of the plurality of hosts such that a summation over the plurality of hosts of the value for the local resource maximum yields an aggregate value that does not exceed the maximum number of concurrent users" since a single, centralized server is not analogous to a plurality of hosts. Consequently, this element is not disclosed, taught, or suggested by *Troxel*.

As at least one element of Claim 25 is not disclosed, taught, or suggested by *Troxel* or *Soltis*, either individually or in combination, it is respectfully submitted that Claim 25 is patentable over the cited art and is in condition for allowance.

CLAIMS 9-15, 17-19, 21-24, 26-30, 32-35, 37-40, AND 42-44

Claims 32-35 are computer-readable medium claims that each feature limitations similar to those recited in method Claims 8, 16, 20, and 25. Consequently, it is respectfully submitted that Claims 32-35 are patentable over the cited art and are in condition for allowance for at least the reasons given above with respect to Claims 8, 16, 20, and 25 respectively.

Claims 37-40 are apparatus claims in accordance with 35 U.S.C. § 112, sixth paragraph, which each feature limitations similar to those recited in method Claims 8, 16, 20, and 25. Consequently, it is respectfully submitted that Claims 37-40 are patentable over the cited art and are in condition for allowance for at least the reasons given above with respect to Claims 8, 16, 20, and 25 respectively.

Claims 42-44 are apparatus claims that each feature limitations similar to those recited in method Claims 8, 16, and 25. Consequently, it is respectfully submitted that Claims 42-44 are patentable over the cited art and are in condition for allowance for at least the reasons given above with respect to Claims 8, 16, and 25 respectively.

Claims 9-15, 17-19, 21-24, and 26-30 are dependent claims, each of which depends (directly or indirectly) on one of the claims discussed above. Each of Claims 9-15, 17-19, 21-24, and 26-30 is therefore allowable for the reasons given above for the claim on which it depends. In addition, each of Claims 9-15, 17-19, 21-24, and 26-30 introduces one or more additional limitations that independently render it patentable. However, due to the fundamental differences already identified, to expedite the positive resolution of this case a separate discussion of those limitations is not included at this time, although the Applicant reserves the right to further point out the differences between the cited art and the novel features recited in the dependent claims.
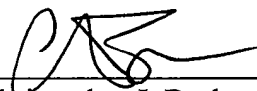
CONCLUSION

It is respectfully submitted that all of the pending claims are in condition for allowance and the issuance of a notice of allowance is respectfully requested. If there are any additional charges, please charge them to Deposit Account No. 50-1302.

The Examiner is invited to contact the undersigned by telephone if the Examiner believes that such contact would be helpful in furthering the prosecution of this application.

Respectfully submitted,

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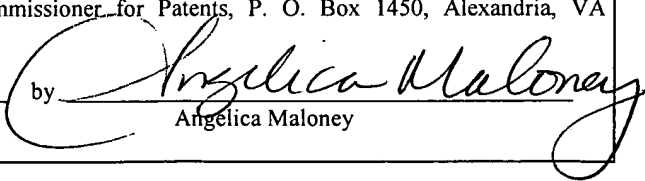Christopher J. Brokaw
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